# St. Bartholomew's Hospital

"Æquam memento rebus in arduis
Servare mentem."
—*Horace*, Book ii, Ode iii.

# JOURNAL.

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## CALENDAR.

| | | |
|---|---|---|
| Sat., Oct. | 1. | —Rugby Match *v.* Pontypool. Away.<br>Association Match *v.* St. Thomas's Hospital. Away. |
| Mon., ,, | 3. | —Term begins. |
| Tues., ,, | 4. | —Sir P. Hartley and Mr. L. Bathe Rawling on duty. |
| Wed., ,, | 5. | —Rugby Match *v.* London Hospital. Home. |
| Fri., ,, | 7. | —Sir Thomas Horder and Sir C. Gordon Watson on duty.<br>Medicine: Clinical Lecture by Dr. Hinds Howell. |
| Sat., ,, | 8. | —Rugby Match *v.* Plymouth Albion. Away.<br>Association Match *v.* Harrod's. Away. |
| Mon., ,, | 10. | —Special Subjects: Clinical Lecture by Mr. Just. |
| Tues., ,, | 11. | —Dr. C. M. Hinds Howell and Mr Harold Wilson on duty. |
| Wed., ,, | 12. | —Surgery: Clinical Lecture by Mr. Harold Wilson. |
| Fri., ,, | 14. | —Medicine: Clinical Lecture by Sir Thomas Horder. Dr. A. E. Gow and Mr. Girling Ball on duty. |
| Sat., ,, | 15. | —Rugby Match *v.* Bedford. Away.<br>Association Match *v.* Old Brentwoods. Home. |
| Mon., ,, | 17. | —Special Subjects: Clinical Lecture by Mr. Bedford Russell. |
| Tues., ,, | 18. | —Prof. Fraser and Prof. Gask on duty. |
| Wed., ,, | 19. | —Surgery: Clinical Lecture by Mr. Harold Wilson.<br>**Last date for receiving matter for the November issue of the Journal.**<br>Rugby Match *v.* Cambridge University. Away. |
| Fri., ,, | 21. | —Medicine: Clinical Lecture by Sir P. Hartley.<br>Sir P. Hartley and Mr. L. Bathe Rawling on duty. |
| Sat., ,, | 22. | —Rugby Match *v.* Wasps. Home.<br>Association Match *v.* Selfridge's. Away. |
| Mon., ,, | 24. | —Special Subjects: Clinical Lecture by Mr. Elmslie. |
| Tues., ,, | 25. | —Sir Thomas Horder and Sir C. Gordon-Watson on duty. |
| Wed., ,, | 26. | —Surgery: Clinical Lecture by Mr. Girling Ball. |
| Fri., ,, | 28. | —Medicine: Clinical Lecture by Sir Thomas Horder. Dr. C. M. Hinds Howell and Mr. Harold Wilson on duty. |
| Sat., ,, | 29. | —Rugby Match *v.* Moseley. Away. |
| Mon., ,, | 31. | —Special Subjects: Clinical Lecture by Mr. Bedford Russell. |

## EDITORIAL.

IT is characteristic of Bart.'s that no fuss is made in welcoming Freshmen at the beginning of the October term. There is no speech-making and no public prize-giving, as in many of the younger medical schools. You enter this great institution, as you will one day reluctantly leave it, quietly and without ostentation. Whatever may be your feelings during your first few weeks in the Laboratories, Dissecting Rooms and Lecture Theatres, or in the Surgery and Wards, it is certain that eventually your affection for the place will grow more and more as she gradually claims you. This is a place older than Cambridge or Oxford, and more deeply steeped in tradition than either of them. The Hospital still occupies the site where it was first built. We still enter by the Smithfield gate where our founder Rahere entered eight hundred years ago.

"Think," says Sir D'Arcy Power, in a celebrated Abernethian Address, "as you go across the Square of the many generations who have walked across it before you. Patients innumerable, with their friends, some in the deepest grief and anxiety, others rejoicing in their new-found health. Great teachers going to lecture at the College of Physicians or the Barber Surgeons' Hall: now and again a false man like Dr. Lopez, our first physician, going to his traitor's doom at the Tower for plotting to poison Queen Elizabeth, or again a political prisoner like the Governor of Dunkirk who complained that the Sisters emptied their slops under his bedroom window. Think also of those other occupants of the Hospital who were not medical men, and yet lived within its precincts, of Sir Thomas Bodley, the founder of the Bodleian Library, and of Col. Pride on the dull December morning when he started off to ride to Westminster to purge the House, and at Cromwell's command to take 'that bauble' away."

In more recent times equally famous men have walked the Square, great physicians and surgeons, and also some whose fame has been won in other fields than medicine. Dr. Grace and the late Poet Laureate are of this number, and so is Dr. Thomas Young, a brief biography of whom appears in these pages.

The tradition of the Hospital is summed up in the

words over the entrance of the Medical College: "Whatsoever thy hand findeth to do, do it with all thy might." It is practised by everyone from the Treasurer to the youngest probationer, and carried by Bart.'s men to the uttermost parts of the earth.

Lest, however, it should be thought that the old custom of giving Freshmen a heavy lecture from the Editorial Chair has been resumed, we shall add no more. Much more interesting reading and more valuable information will be found in Sir D'Arcy Power's *History of St. Bartholomew's Hospital*, a book which everyone will enjoy.

* * *

All his former clerks and house physicians will have noticed with pleasure that Dr. W. Langdon Brown has succeeded Sir Humphry Rolleston as Regius Professor of Physic in the University of Cambridge. We are delighted that this honour should have been conferred upon him. A happier choice could not have been made. Dr. Langdon Brown's contributions to the progress of our Medical School will not be quickly forgotten. *Physiological Principles in Treatment* has done much to place medicine on a sound physiological basis; this and the recognition of the importance of psychology in clinical medicine were advances of the first magnitude. All Dr. Langdon Brown's work bears the clear stamp of a brilliant intellect; the charm of his lectures, the accuracy and inspiration of his teaching and his unerring discrimination between true and false make him an ideal teacher of clinical medicine. His kindness and generosity ensure for him the affectionate regard of all his pupils. We congratulate him heartily upon his recent distinction.

* * *

Subscriptions to the College Appeal Fund from old St. Bartholomew's men have now reached the figure of £19,000. This sum has been raised from less than 300 people. If the remainder of the 3800 to whom letters have been sent would respond in like manner there would be no difficulty in obtaining from Bart.'s men alone the whole sum required.

* * *

Sir Humphry Rolleston has been elected Fitzpatrick Lecturer for 1933 at the Royal College of Physicians. Dr. C. S. Myers is Bradshaw Lecturer and Dr. E. A. Carmichael is Oliver Sharpey Lecturer. We offer them our congratulations.

* * *

We learn with pleasure that Dr. R. H. Bettington has won the Australian Amateur Golf Championship.

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## ANNUAL BALL.

A Dinner Dance will be held on Thursday, November 17th, at Grosvenor House, Park Lane. Dinner 8.30 p.m. Dancing, 9.30 till 2.30 a.m. Arthur Rosebery and his Band from Romano's have been engaged. A cabaret will be arranged. Tickets may be obtained from the following:

| | | |
|---|---|---|
| Mrs. E. H. Kettle. | A. J. Owston. | Hon. Secs. |
| Mrs. Girling Ball. | S. E. Furber. | |
| Mrs. J. D. Barris. | B. Rait-Smith. | |
| Mrs. T. H. Just. | A. H. Pirie. | |
| | R. H. Barrett. | |

Tickets: 35*s.* (double); 21*s.* (single).

* * *

In the last few days two books of special interest have been published. The one is Dr. Roxburgh's long-awaited work, *Common Skin Diseases*, beautifully illustrated with photographs of the author's own cases, many in colour, and published by Lewis's at the modest price of 18*s.* The other is Vol. LXV of *Saint Bartholomew's Hospital Reports*, including a general index to Vols. XLI–LXV (1905–1932), prepared by Mr. Girling Ball. The contents are as follows:

I. In Memoriam:
   Sir Frederick Andrewes, O.B.E. By Hugh Thursfield.
   Dr. James Calvert, C.B.E. By W. Langdon Brown.
II. The Relative Value of Radiotherapy in the Treatment of Cancers of the Upper Air-passages. By W. Douglas Harmer.
III. Causalgia. By J. Paterson Ross.
IV. Chronic Myelocytic Leukæmia in a Child. By C. H. S. Harris and Charles F. Harris.
V. The History and Work of the Cancer Research Committee of St. Bartholomew's Hospital. By R. G. Canti and W. M. Levitt.
VI. The Early Diagnosis of Carcinoma of the Cervix. By John Beattie.
VII. Experimental Work on the Kidney and Ureter in Animals. By John Hosford.
VIII. Hæmatemesis following Peptic Ulceration. By E. R. Cullinan and R. K. Price.
IX. Massive Collapse of the Lung in a Case of Bronchial Carcinoma. By James Maxwell.
X. Subclavian Aneurysm following Fracture of the Clavicle. By H. P. Nelson.
XI. Some Observations on the Lymphocyte in Cancer. By Ralph Phillips.
XII. Secondary Malignant Disease of Bone. By R. W. Raven.
XIII. The Use of Nembutal as a Basal Hypnotic. By A. M. Boyd.

This is one of the best volumes we have had for a long time; it consists largely of work done by the younger members of the Hospital, and is an admirable example of the keenness of the Staff at the present time.

The Bart.'s *Reports* are edited by a Committee with Dr. Geoffrey Evans and Mr. Girling Ball as Editors. The *Reports* give an indication of the work which has been done in the Hospital during the past year, and it is desirable that every Bart.'s man should know of it. The subscription is 15*s.* a year, and should be sent to Mr. Elmslie, 1A, Portland Place, W. 1.

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### HOUSE APPOINTMENTS.

The following gentlemen have been nominated to House Appointments from November 1st, 1932:

| | |
|---|---|
| *Junior House Physicians*— | |
| Sir Percival Hartley | W. Wilson. |
| Prof. F. R. Fraser | E. F. Scowen. |
| Sir Thomas Horder, Bart. | R. Knox. |
| Dr. Hinds Howell | O. A. Savage. |
| Dr. A. E. Gow | H. F. Green. |
| *Junior House Surgeons*— | |
| Mr. L. Bathe Rawling | J. O. Harrison. |
| Prof. G. E. Gask | H. H. Langston. |
| Sir Charles Gordon-Watson | J. A. Nunn. |
| Mr. Harold Wilson | W. H. Gabb. |
| Mr. W. Girling Ball | J. M. Jackson. |
| *Intern Midwifery Assistant* (Resident) | J. T. C. Taylor. |
| *Intern Midwifery Assistant* (Non-Resident) | R. A. Sykes. |
| *Extern Midwifery Assistant* | J. R. Martin.* |
| *H.S. to Throat and Ear Departments* | P. G. Scott. |
| *H.S. to Ophthalmic Department* | A. J. W. Beard. |
| *H.S. to Venereal and Skin Departments* | G. Wynne Thomas.* |
| *H.S. to Orthopædic Department* | T. E. Burrows. |
| *H.P. to Children's Department* | M. Westwood. |
| *Junior Resident Anæsthetists* | B. C. Murless.<br>S. E. Birdsall. |
| *Non-Resident Anæsthetist* | M. D. C. Hosford. |
| *Casualty House Physicians* | H. D. White.*<br>J. R. Martin.†<br>H. D. Magnus.†<br>J. N. Groves.† |
| *Casualty House Surgeons* | F. J. Beilby.*<br>O. S. Tubbs.† |

* 3 months, November. † 3 months, February. All others for 6 months.

## OBITUARY.

### SIR RONALD ROSS, K.C.B., K.C.M.G., F.R.S.

THE death, after a very long and trying illness, of Sir Ronald Ross, on September 17th, at the Institute named after him, removes a many-sided man whose record, like that of some others, proves the fallibility of the old and oft-repeated saying that a man cannot be first-rate in more than one line, and of the more particular dictum that "he is too good a poet to be a good physician." Ross was a poet, a man of letters, a mathematician, and active in other sciences, such as psychology, as well as a genius in parasitology.

Born three days before the outbreak of the Indian Mutiny, on Friday, May 13th, 1857, a day and number on which, in his *Memoirs*, he comments with a light touch as offering an excuse for those who have not made a success of life, he was the eldest of the ten children of General Sir C. C. G. Ross (1824–92), K.C.B., of the Indian Army. His birthplace was Almora in the Kumaon Hills, in the North-West Provinces. After school education in the Isle of Wight and Southampton, he entered the Medical School of St. Bartholomew's

*Fox Photos.*

Hospital on October 29th, 1874, and without any distinction as a student, qualified M.R.C.S. in 1879, one diploma being then sufficient for registration, and was surgeon on a Transatlantic steamship. After taking the L.S.A. (1881), he obtained a commission in the Indian Medical Service on April 2nd of the same year, being 16th out of the 22 successful candidates, and sailed for India in the following September. In his early years he was attracted to the mathematics of music and to a literary career, but the family tradition in favour of India was dominant. His routine duties, first in Madras and later elsewhere, occupied his time, and there were few opportunities and no official encouragement to undertake original research, but he wrote a prose romance, "The Child of the Ocean," before he

was thirty. Laveran's discovery of the malarial parasite in 1880 was slow in receiving general recognition; Sir Patrick Manson did not hear of it for five years, and looked for it in vain until 1892, when he had come home from China and joined the staff of the Seamen's Hospital at Greenwich; in India its very existence was doubted in 1893, when Ross, writing in the *Indian Medical Gazette*, argued that the "supposed hæmatozoon" was really the result of post-mortem changes in the normal cells of the blood. Before this, Ross had taken the D.P.H. (1889) when on leave, and had attended a course of bacteriology given by E. E. Klein, Lecturer on Physiology at his old medical school.

Early in 1894, Ross, then a major, when home on leave, consulted A. A. Kanthack, Director of the Pathological Department at the Hospital, about malarial problems, and was advised to see Manson, then living at 21, Queen Anne Street. He was thus converted to the reality of the malarial parasite, and inspired with enthusiasm for the hypothesis, based on Manson's discovery in 1877 when at Amoy of this mechanism as regards filarial infection, that malarial infection is also transmitted by the mosquito. This was the beginning of Ross's life-work, for on his return to India he began a long series of patient and laborious experiments, during which he was constantly in correspondence with Manson, to prove the correctness of the theory that the mosquito carries the malarial parasite. In spite of many difficulties this great success was reached in 1898, and, resigning from the Indian Medical Service on July 31st, 1899, Ross came to England to continue the work, especially the prevention of malaria by destruction of the mosquitoes and their breeding-places. Most active in these propaganda, he travelled widely, wrote, spoke, and achieved much, though not the rapid and complete conquest he had optimistically anticipated at first; but Surgeon-General W. C. Gorgas, it will be remembered, wrote to thank him for the means which had made it possible to complete the Panama Canal. Meanwhile he was lecturer, and later professor, at the Liverpool School of Tropical Medicine (1899–1912), and received the Nobel Prize and the C.B. (Civil) in 1902. Honours rightly crowded upon him; he became Fellow (1901), Royal Medallist, and a Vice-President of the Royal Society, and was created K.C.B. (Civil) in 1911, and K.C.M.G. in 1918. In 1912 he came to London as Physician for Tropical Diseases at King's College Hospital, and started practice. On the outbreak of war he rejoined, was active in various ways at home and in Egypt, and later on had the experience of being torpedoed. In 1926 the Prince of Wales opened the Ross Institute and Hospital for Tropical Diseases at Putney Heath, of which Ross was Director-in-chief.

Full of energy, he was a prolific writer: as editor of *Science Progress*, he contributed many essays on psychological and mathematical problems; he wrote his *Memoirs* (1923), "Inscribed to the People of Sweden and to the Memory of Alfred Nobel," romances such as *The Spirit of Storm* (1896), and *The Revels of Orsera* (1920), plays, and many volumes of poems, from one of which, "Discovery," struck out when he had satisfied himself of the proof of the mosquito theory, the opening lines may be quoted:

> "This day relenting God
> Hath placed within my hand
> A wondrous thing."

A strong man with decided and outspoken opinions, Ross made many friends, but became engaged in not a few controversies. He did a wonderful service to mankind, and his name, like that of those outstanding Englishmen, Edward Jenner and Joseph Lister, will be immortal.

R. H.

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# THE FUNCTIONS OF THE SYMPATHETIC NERVOUS SYSTEM.*

## INTRODUCTION.

ONE'S very first introduction to anatomy in the dissecting-room is sufficient to impress upon the mind the very great contrast between the anatomy and the physiology of the two great divisions of the nervous system. One quickly appreciates that the great bulk of the nervous system extending to the periphery by discrete and separate fasciculi is associated with sensations pouring in from the outside world, and with the expressions of behaviour and locomotion engendered by these sensations. This portion of the nervous system is concerned with the relation of the organism to its external environment, with what the older anatomists called the animal life—*in short with man as a public character*.

The other system characterized by peripheral ganglia and complicated plexuses obviously tied up with the intestinal, the pulmonic and the cardiac systems, and thus related to nutrition, aëration and circulation, was called by the older anatomists the vegetative system in contrast to the former. It is associated with man as a secluded domesticated animal.

This distinction is valuable, but formerly it was pushed too far, and it led the earlier physicians to draw

* Being a lecture given in the Applied Physiology Course, arranged by Prof. F. R. Fraser.

too sharp a line between the two systems, and even to regard them as quite independent of each other.

To understand the sympathetic nervous system we require, as in all other problems in medicine, knowledge drawn from anatomy, histology, comparative anatomy and embryology, as well as a knowledge derived from experiment, pathology, pharmacology and clinical observation.

### Comparative Anatomy.

A study of the history of the sympathetic nervous system reveals that its peripheral portion becomes an organized system at a comparatively late period in the evolution of the vertebrates. In the lowest vertebrates the first portion that can be distinguished is the vagal contribution to the para-sympathetic system. Later forms show the possession of a sacral autonomic system; and last of all appears the thoraco-lumbar portion, to which only is the term "sympathetic" now strictly applicable.

At first this sympathetic portion does not form conspicuous nerve-plexuses. These are really represented by a widespread distribution of the chromaffin- or adrenalin-producing elements, these being, of course, but modified sympathetic nerve-cells. Amongst the higher vertebrates the peripheral ganglia and the plexuses become more considerable and extensive, while the adrenalin-producing mechanism becomes more and more restricted, and is concentrated in the adult in the suprarenals. This reduction is still occurring in ourselves, for we possess additional adrenalin-producing masses outside the suprarenals which disappear in the first few years of life.

The events are repeated in the same order in the ontogeny, the development of the organism. First appears the cranial parasympathetic system, then comes the sacral, and last of all appears the thoraco-lumbar portion. The individual steps of the elaboration of the peripheral ganglia and nerve-fibres from that part of the neural tube called the neural crest have long been known, and further, the discovery of the transformation of some of these same sympathetic neuroblasts into adrenalin-producing cells is one of the more important contributions of anatomy to medical science.

From these facts it is clear that the organized and complex state of the sympathetic system as we now know it is a comparatively late acquisition. We see clearly also that its late derivation peripherally from the central nervous system must have certain anatomical effects upon it.

The method of comparative anatomy has led us to postulate that the central elements of the sympathetic system are older than the peripheral portions, and anatomists have long placed these centres in the region of the hypothalamus. The medullo-spinal connections of this system have become restricted in the cord (roughly from I.Th. to L. 3), mainly because the rest of the spinal axis had become allotted to the formation of the limb plexuses.

Investigations, then, into the structure and origin of the system lead us to infer that one distinction of this system lies in the fact that its connector neuron and the nerve-cell it makes synaptic relation with, lie outside the cord, and not in it. This arrangement gives us the well-known pre-ganglionic and post-ganglionic fibre, the latter arising from a peripheral nerve-cell. Thus the sympathetic system can no longer be defined in functional terms. It is a morphological conception, and the criterion is the structural basis of pre-ganglionic and post-ganglionic fibre.

### The Chemical Relationship.

I have mentioned the transmutation of some sympathetic nerve-cells into adrenalin-producing cells. Further, I have drawn attention to the fact that this transformation is first diffuse, and later becomes restricted and concentrated in one single organ. The position of adrenalin in the sympathetic becomes of some importance. It acts, as is well known, in two ways. In one regard it actually replaces the post-ganglionic fibre, and its distribution by the blood-stream is the equivalent of transmission along a post-ganglionic fibre. For all the splanchnic fibres which reach the medulla of the suprarenal are pre-ganglionic, and the adrenalin-producing cell is the actual ganglion cell, but instead of transmission of a nervous impulse we get the vascular distribution of this sympatho-mimetic substance, giving a slower and more diffuse effect than the actual fibre would have done.

Adrenalin also acts in a second way. It intermediates between the ending of the nerve-fibre and the actual muscle or gland-cell. For we all concur now in our observations that these nerve terminals are really pericellular, and not intracellular. The evidence now makes it practically certain that between the ending and the acting structure either adrenalin or an adrenalin-like substance (Cannon calls it "sympathin") intervenes in determining the actual effect. These substances are produced locally, slowly accumulate, diffuse, and get destroyed. The local chemical state does much to account for many of the discrepant results obtained by stimulation, for it has often been observed that the occurrence of an augmentor or of an inhibitor effect depends on the state of tonus in the organ, and what has happened immediately prior to the experiment. In the case of the parasympathetic the intermediate

chemical substance is either an acetyl choline or something very like it.

From our comparative studies we then can conclude that in the higher animals there is a progressive substitution of the more specific and swifter nervous conduction for the slower and more diffuse method of chemical conduction, and reliance is placed rather on the local production of chemical substance for the final executive effect, and not upon their circulation.

### Some General Anatomical Considerations of the Peripheral System.

In the outflow of the pre-ganglionic fibres there is in the antero-posterior direction two great sweeps in the system. One with its peak at about the fifth dorsal sweeps upwards, and the other with its peak at about the tenth dorsal sweeps downwards into the abdominal region. These cranial and caudal sweeps innervate the organs in a definite succession, which depends on the order of their embryological development. Thus the upward sweep innervates successively the head and face, then the heart, then the lungs, and then the upper extremity. The same principle holds in the abdominal, pelvic, hind limb and perinæal region.

Embryological investigation makes it clear that in the transverse axis the vertebrate is made up of three principal strata. The parietal stratum represents the body-wall and the limbs, the soma. Next to this is the intermediate or mesonephric ridge, and in the median plane come the visceral or splanchnic structures. The sympathetic system has certain definite arrangements in each of these three areas. The fibres which are destined for the soma or parieties come from the segmental or paravertebral ganglia. They travel incorporated in the peripheral nerves, and thus these nerves are composed of somatic motor, somatic sensory and sympathetic fibres. Those passing to the intermediate mesonephric structures, the kidney and the ureter, the suprarenal, the ovary and the testis, the tubes and the uterus, the prostate and the vesicles, come from lateral ganglia like the renal, the medulla of the suprarenal, the inferior hypogastric ganglia lying on either side of the rectum. In both these cases there are no parasympathetic fibres, unless one is willing to include the antidromic conduction of the ordinary sensory fibres as the homologue of the parasympathetic fibres.

The splanchnic system gets its fibres from the ganglia, which lie in front of the aorta—cardiac, pulmonic, cœliac and mesenteric ganglia and plexuses—and these fibres reach their destination by running in close association with the adjacent blood-vessels. The cervical ganglia represent, of course, not only fused segmental, but also visceral ganglia. Indeed, the cervical sympathetic in part might be looked on as a superior splanchnic nerve. Its segmental branches run with the peripheral nerves, but the visceral elements go to the cavernous, the cardiac and pulmonic plexuses.

Many operations have been invalidated by neglecting these morphological principles.

### The Hierarchical Arrangement in the System.

Looked at from another point of view, the sympathetic system is really an inverted pyramid. Unlike the cerebrospinal system, this system reaches its greatest complexity at the periphery, and becomes simpler and concentrated at the centre. The hypothalamic nuclei are small, and concentrated in a small area. The subsidiary centres in the medulla and cord are more spread, but still relatively restricted, while the diffuse complexity of the peripheral plexuses makes their unravelling by ordinary methods almost hopeless. This means that stimulation started from centre must almost of necessity be total in its effects. Some discrimination is possible by the arousal of the medullo-spinal centres, but the pre-ganglionic fibres must, nevertheless, diffuse their effects. Actual investigation suggests that it cannot be less than four to six segments. Thus there is a strong presumption that the general effects of the sympathetic system are likely to be the more important, and that local effects are likely to be unusual, and not important in the body economy.

### The Results of Sympathetic Stimulation.

It is usual in text-books to give a list of the effects of sympathetic obtained by stimulation, and to let the matter rest there. This tells us little of how such functions are woven into the general pattern of the life of the organism. It does not even prove that such effects are of any functional value to the organsm. Nevertheless these experimental results need some consideration. You can look up these lists any time you like, but I want to draw your attention to a general view of them. If we take the soma or the parieties of the body, *i. e.* its wall and its limbs, to which the sympathetic fibres travel by way of the peripheral nerves, the sympathetic fibres exert a tonic vasoconstrictor effect, a sudomotor effect producing sweating, which is a special and not a continuous action, and also a pilomotor effect producing a hair erection and gooseflesh, which again is an occasional and not a tonic activity.

On the derivatives of the intermediate mesonephric ridge the action is either merely vaso-constrictive or unknown. The renal effect apart from the indirect

vasopressor effect on secretion is unknown. The effect on the gonads, if any, is unknown. On the accessory structures like the vesicles and the uterus the sympathetic augments their muscular contractions. After removal of the hypogastric plexus, which occurs in denervation of the bowel, the vesicles are unable to expel their contents and sterility in males follows.

On the splanchnic organs the action of the sympathetic system is reversed. It is still mainly vaso-constrictive and partly vaso-dilator, but on all the entoderm and all the derivatives of the entoderm like the major digestive glands and the lungs it is a depressive nerve. It inhibits peristalsis, but augments the sphincters. It inhibits the glycogenic function of the liver and releases sugar, and perhaps has a similar effect on the protein storage in the liver. It inhibits the production of insulin, and thus opposes the vagal effect on the pancreas. It inhibits the bronchial musculature and thus acts as a bronchial dilator. It is inhibitor to the bladder.

[On the vascular organs like the heart and the spleen it is wholly excitor, and causes both to contract more considerably when stimulated.]

### The Maintenance of the Internal Environment.

From this general survey two things emerge: (1) that the function of the sympathetic system is related to anatomical principles, and (2) the functions are of two kinds—inhibitor or excitor, continued or occasional.

This occasional aspect of the sympathetic functions is a rather astonishing affair. The astonishment is increased by the fact that an animal exhibits to casual inspection no difference whether it has a sympatho-adrenal apparatus or not. It is possible, for instance, to remove in the cat the greater part of the sympathetic chain, to cut the splanchnics, and curette out at least the greater part of the adrenal tissue from the supra-renals. Such an animal under simple ordinary conditions shows no difference in its functions and capacities. It is only when it is made emotional by the presence of a dog, with an anti-cat complex, or pain is inflicted on it, or it is over-driven and fatigued, chilled or asphyxiated or given an anæsthetic, that its diminished power of response or endurance becomes evident. In short it cannot adjust its internal environment when this is shifted by muscular exercise or disturbed by emotion.

I do not intend to travel the ground, but it is well known that the *body temperature*, *water content*, *salt content*, *calcium*, *sugar* and the rest can only move within narrow limits if the animal is to survive. When excess or deprivation occurs, the body by various adjustments can compensate for these digressions, and keep its own circulating media in a state of constant equilibrium. For example, an excess of sugar in the first instance is temporarily segregated in the skin; then it is chemically changed and stored in the liver and muscles as glycogen, and then converted into sugar at such a rate that the blood-level remains constant. Should it fall below 70 mgrm. per cent., then ensues the hypoglycæmic reaction, the pupils dilate, the body-surface pales, the blood-pressure rises, the animal sweats—these are of course sympathetic effects. The vagal-insulin mechanism promotes the formation of glycogen, the sympatho-adrenalin mechanism changes the glycogen to sugar. The balance of these maintains the equilibrium of the internal body economy. Shifts in the equilibrium are likely to occur only under exceptional conditions, hence the occasional activity of the sympatho-adrenal apparatus.

The responses to rise and fall in temperature are again of the same kind. The system is subordinate to our more intelligent efforts at dealing with changes of temperature.

In this maintenance of equilibrium the sympathetic is only one method amongst others, such as the threshold levels of the kidney and so on. The generalization may be attempted that the parasympathetic elements on the whole promote digestion, absorption, elimination of waste, and thus restore, build up and conserve the energies of the organism, while the sympatho-adrenal system breaks down, liberates, and mobilizes the energies of the body, thus promoting awareness and activity.

### The Tonic Functions.

These are best seen in the case of the eye, and in the constant constrictor tone of the blood-vessels. If the cervical sympathetic be divided there follows Horner's syndrome—narrowing of the pupil, narrowing of the palpebral fissure, and retraction of the eyeball, and to these may be added relaxation of the nictitating membrane and a fall in intra-ocular pressure. These effects will last for years. Though somewhat unsightly, they matter little in any other way. The explanation of the persistent tonic effect in maintaining a wider pupil, an open and forward looking eye and a good intra-ocular pressure can only be explained on the basis that these facilitate the grasp and comprehension of objects in the field of vision, and thus promote the cerebro-spinal activities—a good example of the interaction between the animal and vegetative life.

### The Tonic Vascular Effects.

Vascular reflexes are particularly difficult to investigate because so many variables have to be controlled.

However, the maintenance of the blood-pressure and the distribution of the blood depend on the constrictor tonus exerted by the sympathetic nervous system.

If we contemplate a man lying horizontally and completely exposed in a warm room, say about 24° C., we can make a picture of the blood distribution :

(1) The brain uses the constrictor effect but extremely little. It is the master organ, and on no account must the pressure or the rate of flow of the blood through it change. This is secured by the existence of reflexes from the depressor nerve and the carotid sinus, which will raise or lower the pressure according to whatever has occurred.

(2) The heart will be balanced between the vagus and sympathetic, and here increased activity of the heart occasioned by the sympathetic impulses will be accompanied by dilatation of the coronary vessels.

(3) The constrictor tonus in the lungs is extremely slight, and the flow through the lungs will passively follow changes in pressure brought about by changes elsewhere.

(4) There is but slight constrictor tonus in the muscles. It is sufficient to deflect the blood from inactive to active muscles, for vaso-dilatation immediately follows in an active muscle.

(5) In the gut the naso-constrictor tonus is high, and inhibitory effects on gut movements are almost its necessary accompaniment.

(6) Constrictor tonus is extremely high in the skin.

The tonic reflexes are best seen in two situations. One is the vaso-constrictor control of the peripheral blood-vessels, and the other is in the effects on the unstriped muscle of the eye. The distribution of the blood is one of the most complicated things in the body to understand. Blood is, like all fluids, incompressible, and if you push it out of one part, it must go somewhere else. Unless the general pressure is constant, no analysis can be made of the change in volume of a limb, for instance. It might be active contraction or dilatation, or it might be a passive effect due to increase of pressure elsewhere.

Keeping this in mind, nevertheless it can be shown that the vascular reflexes are constantly operating. A whole series of these come into being in order to keep the flow through the brain constant, both in regard to amount and to composition. They have been aptly termed "buffer reflexes." The best known of these are the familiar depressor reflex and the newly discovered reflexes from the carotid sinus. Here the afferent impulses travel through the ninth and tenth nerves, but any nerve may cause them. They execute their results through the vagus and the sympatho-adrenalin mechanism.

There are the reciprocal effects between the skin vessels and the splanchnic area. If one dilates, the other contracts, and *vice versâ*. There are the reciprocal effects between the two sides of the body. If one side of the face, for instance, be dilated, there will ensue a small but definite vaso-constriction of the other, and the same can be shown in the arms. If the cooling or warming be considerable, the centres in the brain will be excited and a general reaction to cold or warmth will ensue, and this, of course, will be appropriate for each kind of stimulation, *i. e.* if cold, general constriction ; if warm, general vaso-dilatation of the skin areas.

### A Specific Example of the Application in Medicine.

There are conditions in which a part of the vascular tree shows a continued heightened constrictor tone—Raynaud's disease, for example. We do not know whether this is due to more impulses than usual reaching the periphery ; we do not know if there is more liberation than usual of adrenalin-like substances in the area of these vessels ; we do not know if the vessels are more sensitive than usual to the nerve impulses or the adrenalin substance, or whether they are in themselves in some way abnormal. We do know, however, that if the vaso-constrictor nerves be removed, then a condition of vaso-dilatation follows which endures for a very long period, and which, even if it does not remove the underlying cause, so benefits these patients that clinically they are cured.

It is first a problem in physiology to determine that this constrictor tone is present. If, as a matter of fact, you make experiments on your own body, it is easy to prove that normally there is a fairly strong constrictor tone in the hands as compared with the forearms. It is easy to prove that there is an even higher constrictor tone in the feet than in the hands—this is the real cause we think at the moment for cold feet. We have proved that these constrictor nerves run with the peripheral nerves, and have precisely the same distribution as the peripheral nerves. Those that run with the ulnar nerve stop short at the middle of the ring finger, and it is possible to demonstrate a difference in temperature between the two sides of the ring finger when the ulnar is blocked by novocaine. They do not run with blood-vessels. Then it is a problem in dissecting-room anatomy to decide at what point all the constrictors to the hand, for instance, can be removed. The answer is clear—removal of the cervical sympathetic chain. This means in practice the stellate ganglion. Actually it is sufficient to remove either the pre-ganglionic or post-ganglionic fibres, since all the evidence we have got goes to prove there are no reflexes starting from the peripheral

ganglia. In practice the ganglion is removed, for this is anatomically the surest and easiest way of getting rid of vaso-constrictors, and also ensures that regeneration will not occur. The approach to the ganglia is a problem in anatomy. It can be done from the front of the neck, or from the back, by removing the first and second ribs. The result of these operations is to induce a permanent vaso-dilatation in the area from which the constrictors are removed. Such a hand is now permanently closer to the temperature of the blood. It no longer reacts to cold and heat like the hand which has its nerve supply intact. It tends to hold its temperature constant, and, if cooled or warmed, changes its temperature more slowly and returns more quickly to its former level than the normal side.

H. H. Woollard.

## ON THE DETOXICATION OF ATROPINE *IN VIVO.*

### A PRELIMINARY COMMUNICATION.*

OBSERVATIONS on the power of liver extract to break down the molecules of certain alkaloids (notably atropine) *in vitro* date back to comparatively early days, and a full summary of work done on these lines together with references is to be found in Gunn's article on "Tolerance" (1). Yet it is strange that while experiments *in vitro* have been conducted in some detail, the application of this principle in the field of practical therapy has received but little attention. Nevertheless it is clear that if it were possible to detoxicate vegetable poisons *in vivo*, that this would constitute a line of treatment whose significance would be comparable to that of diphtheria antitoxin. It is claimed that the following experiment offers good presumptive evidence that this is indeed a practical possibility, and that the molecule of atropine may actually be destroyed within the living cells of a moribund animal.

The propensity of the rabbit to feed upon deadly night-shade suggested to the writer that the liver of this animal would be likely to contain the most active ferment as regards the destruction of atropine.

#### Experiment and Results.

A young rabbit was killed and bled, and its liver, after being excised and separated from the gall-bladder, was found to weigh 10 grm. This was cut into small pieces, which were ground up with sand in Ringer's solution long enough to ensure efficient disruption of the cells. The mixture was centrifuged, and the deposit once more treated in the same way. Both mixtures were poured into a flask, and the proteins precipitated by being brought rapidly to boiling-point. The solution was filtered, and the precipitate washed through with more Ringer. In this way 15 c.c. clear filtrate were obtained.

A cat weighing 2·8 kgrm. was anæsthetized with A.C.E. and urethane. A cannula was tied into its femoral vein, and the blood-pressure and respiration recorded on a drum. Atropine sulphate in doses of 2 mgrm. was given intravenously at short intervals. Vagal paralysis occurred after the first injection, but it was not until 10 mgrm. had been given that toxic signs appeared. The respiration then became embarrassed and extremely irregular and there is little doubt that the animal was about to die. At this point 5 c.c. of the rabbit's liver extract were injected; rapid improvement followed, and in a few seconds the tracings, again normal, clearly showed that *the vagus was no longer paralysed.*

The injections of atropine were continued in increasing doses; 2, 5, 10, and finally 20 mgrm. were given at a time. The blood-pressure and respiration remained steady and regular until, when a total dose of 119 mgrm. was reached, the animal suddenly collapsed. Although its heart continued to beat, the excursion of the pointer on the drum became so small that the blood-pressure was traced out almost as a straight line, and the respiration, after a few seconds of wild irregularity, stopped altogether. The remaining 10 c.c. of liver extract were at once injected, but without apparent effect; it became necessary to begin artificial respiration. In the next 10 minutes no change occurred, save for two or three isolated inspiratory gasps, showing that life still flickered in the respiratory centre. And at the end of this time, although the heart became a little stronger and the gasps slightly more frequent, the clinical picture was essentially unchanged. Five minutes later a large dose of adrenalin hydrochloride was given, and the usual rise in blood-pressure was followed by a startlingly sudden recovery of the medulla—an effect which has been observed several times, and was first described by J. A. Gunn. Half a minute later the tracings were indistinguishable from those which followed the first injection of atropine $2\frac{3}{4}$ hours previously! The recovery was maintained without change for the next $\frac{1}{4}$ hour, when the experiment was terminated. Lack of atropine prevented our determining the dose which would ultimately have proved lethal.

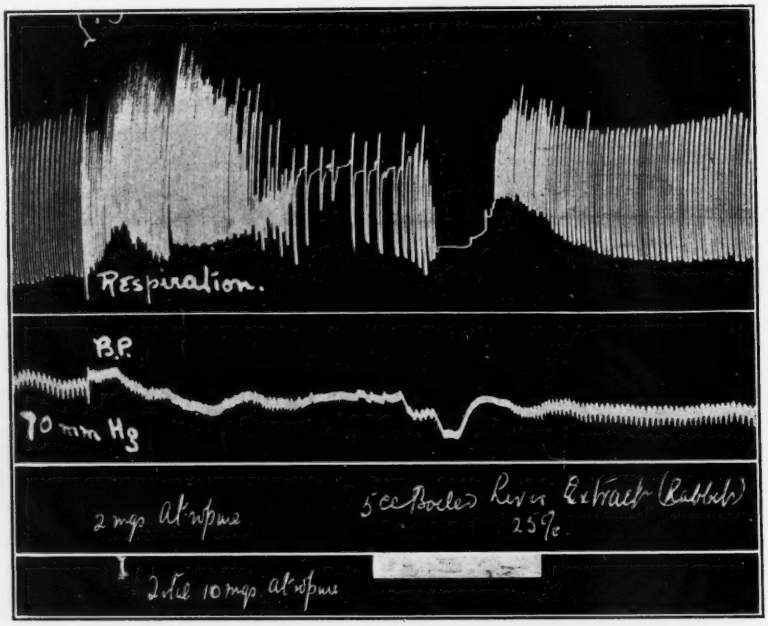
*From the Pharmacological Laboratory, Cambridge.

DISCUSSION.

Belladonna poisoning is neither new nor rare.

From the most remote times the Hindoos have used it for unscrupulous purposes (2), and while it was a favourite amongst the slow poisoners of the Middle Ages (3), " mistakes in pharmacy " are to-day responsible for the majority of accidents.

Yet in spite of our long association with this drug, we *still* are helpless in the face of a large overdose. As is the case with most other vegetable poisons, once absorption has occurred, events must take their course.




CAT WEIGHING 2·8 KGRM. A.C.E. AND URETHANE.

Showing the effect of 10 mgrm. of atropine on the respiration. 5 c.c. boiled liver extract causes the respiration to recover to a normal condition. Note also lifting of vagal paralysis.

The possibility of attacking poisons after they have left the alimentary tract has, on the other hand, yet to be investigated, and it seems as though the application of the physiological principle with which these notes deal may be of considerable therapeutic value.

It is claimed that the foregoing experiment (in which a cat was saved after being given enough atropine to kill at least two men) justifies this assumption; and it is proposed to extend this work to a full investigation.

HARRY BUCKLAND.

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## A CASE OF PFEIFFER MENINGITIS WITH RECOVERY.

MENINGITIS due to Pfeiffer's bacillus is usually fatal. Rivers (1) in 1922 collected 220 cases, which had a mortality of 92%. There were 13 cases with total recovery, of which two were in this country.

Gibbens (2) in 1931 described two cases, one of which recovered. This was a mild case, the cerebro-spinal fluid became clear after the first puncture, and rigidity disappeared in a week. The patient who died had blockage of the spinal canal, and up to 50 c.c. of fluid were removed on several occasions by cisternal puncture. Gibbens also mentioned two cases of survival with defective sight and hearing.

The case described in this paper is of special interest in that it ended in complete recovery, in spite of the fact that the child was extremely ill for several weeks, and there was blockage of the spinal canal. Cisternal puncture was not performed.

On December 7th, 1930, a girl, aged 2½ years, was admitted to Addenbrooke's Hospital, Cambridge, semi-comatose.

She had complained of headache, had been restless,

and had refused food for 6 days. For the last 3 days she had been drowsy, and had vomited frequently.

On admission she refused to talk, except to say "don't" when she was disturbed. She lay on her side, and would not sit up. Her face was flushed. Her eyes were open, and prominent. Temperature 101°, pulse 128, respirations 36.

Nervous system: Cranial nerves natural. No strabismus.

Tendon-jerks exaggerated.

Abdominal reflexes present. Left plantar response extensor, right doubtful.

Rigidity of the neck present. Kernig's sign positive.

By lumbar puncture 25 c.c. of cloudy fluid were obtained. It contained numerous pus-cells, but no organisms were seen. Cultures were sterile. (The fluid was not cultured for some hours after the puncture.)

December 8th: There was a marked external strabismus. The general condition was worse. Rigidity of the neck and extension of the back were more marked. Vomiting continued.

Lumbar puncture was repeated. Only 5 c.c. were obtained, and pressure was not increased. Cultures showed a pure growth of Pfeiffer's bacillus.

For the next few days the rigidity increased, and her eyes became more prominent. She lay on her back, with her eyes wide open. She became extremely wasted. She occasionally asked for water. When she was touched she screamed and scratched.

Lumbar puncture was performed several times, but only a few drops of fluid were obtained.

After a few days her temperature, which had remained at about 101°, began to fall, and her condition began to improve.

On December 31st a clear fluid, under normal pressure, was obtained. This was sterile.

On January 3rd her vomiting became worse. She had a discharge from her right ear, which lasted for a few days. After this she gradually improved.

She was allowed to return home on February 19th, as her family were able to nurse her well.

On discharge she was very wasted, but had more strength than one would have expected from her appearance. She was not able to name objects which she was shown, but saw well enough to blink when a hand was placed in front of her eyes. She was able to hear.

The strabismus remained. She could bend her head forward slightly, but could not touch her chest with her chin. Kernig's sign was doubtful. Ankle and knee-jerks were obtainable with difficulty. Her plantar responses were extensor.

On April 7th, when she was brought up to the hospital again, she was a normal child. Her sight and hearing were good. She was well developed, bright, happy and intelligent. She walked and ran without any clumsiness.

*Summary.*—A child, aged 2½ years, suffering from Pfeiffer meningitis made a complete recovery in spite of being severely ill for over a month, and in spite of the fact that a satisfactory amount of cerebro-spinal fluid was only drawn off on one occasion.

My thanks are due to Dr. Haynes for permission to publish these notes.

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H. E. W. ROBERTON.

## DR. THOMAS YOUNG.

IN the autumn of 1773 a serious young Quaker from Somerset entered himself as a pupil at St. Bartholomew's Hospital, and one feels safe in asserting that a more versatile genius never came to this medical school. His name was Thomas Young. Almost everyone who reads this note will recollect having encountered this name twice before without, perhaps, realizing that the same individual was referred to in each case. Young's Modulus of Elasticity and the Young-Helmholtz theory of colour vision are but two of the contributions to science by this gigantic mind.

Of Young's early education there is adequate material for the biographer, as this astounding child wrote a diary in Latin, recording his educational progress up to the age of fourteen years. He tells us that he had read the Bible twice through and all Dr. Watts's hymns before he was four years old. At six he had Goldsmith's "Deserted Village" by heart; at nine he was reading Newton, and had already found that deep interest in optics which was to colour so much of his scientific work. A story (not, we haste to point out, told in his Latin diary) tells of him that at the age of ten he left home for a new school. As an entrance test he, in common with the other young hopefuls, was required to make a copy in his best handwriting of a piece of English prose provided. He was noticed to take longer over the work than the other children, and was doubtless prematurely dubbed a dense scholar—till he handed in

his papers. There was displayed a correct and beautifully written copy in English, together with equally beautiful and accurate translations into Greek, Latin, Hebrew, French and Italian! The following year he added Chaldee, Syriac and Persian to his philological armoury, and began the hobby of telescope making. At the age of fourteen he also had a fair grasp of Samaritan, Arabic, Turkish and Ethiopian.

At sixteen he was "threatened with consumption," and by all the rules of the game he should now have uttered platitudes for a few wan months, died, and been rewarded by an ultra-pious gravestone. But Young always refused to play the game according to the rules. Two years' rest, fresh air, a diet of eggs, vegetables, milk and beef broth and he is well again, and already in possession of much intimate material for the work on "consumption" which he is to write some years later.

The youth who comes up to London at nineteen to start his medical career is serious to a fault. He has decided that he agrees with Reynolds in that geniuses are not born, but made by application; he will take no sugar in his tea, to show his disapproval of the conditions of Negro labour in the plantations; though ignorant of contemporary thought and letters, he is an accomplished classical scholar; he brings with him letters of introduction to Mr. Burke, Dr. Lawrence and Sir Joshua Reynolds; he has been brought up in a *Sandford and Merton* atmosphere, but happily just manages to miss being a prig. He goes first to Westminster for medical and anatomical studies, and later to John Hunter's lectures. The following year he is at Bart.'s, and it is there, in the dissecting room, that he first becomes fascinated by the structure of the human eye.

The scientific world of the moment is buzzing with controversy over theories of accommodation. Does the eyeball increase in length? Does the corneal curvature alter? Does the lens change its shape? Young sets out to disprove the first two propositions. He himself has very prominent eyes, and on turning the right eye nasally the posterior pole of the globe is exposed. He takes a pair of dividers and slips a bureau key over each point. He then adjusts these (and note that cocaine was not introduced for another fifty years) so that they clamp his eyeball antero-posteriorly. On the least pressure "stars" are produced. The divider head is stiff, and, looking into the distance, he adjusts his painful apparatus until no fresh "stars" appear. Then he accommodates for near vision. No more "stars" are produced. Had the eyeball increased in length on accommodation "stars" must inevitably have been produced. His next step is to immerse his head in a glass bowl filled with water. With the eye so arranged, the media on each side of the cornea have the same index of refraction, so that alteration in its curvature would not change the value of the dioptric system. Yet Young finds that he can still accommodate. Therefore the explanation of accommodation does not lie in the cornea. Young decided that the lens was a muscle which contracted or relaxed under the influence of the nervous system, and that accommodation was brought about in this way. He was made more confident that he was on the right track by observing that eyes that had been successfully couched for cataract lost their power of accommodation. While still a student in the dissecting-rooms he wrote a paper on his theory of accommodation, which was acclaimed to be of such merit that he was elected a Fellow of the Royal Society. (It is interesting to note in passing that John Hunter at once announced that he had previously come to a conclusion on the muscular nature of the crystalline lens, and asked to be allowed to embody his ideas on the subject in a Croonian Lecture.)

One has to relate with some sadness that Young was disappointed in the teaching he received at Bart.'s. This gentleman was not given to enthusiasms. After a first visit to see Mrs. Siddons act he remarks, "She was neither below nor much above my expectations. I can form an idea of something more perfect." Bart.'s was below his expectations. Edinburgh was his idea of something more perfect in medical teaching. Not only did the northern capital help him professionally, but here, cut off from the trammels of Quakerism, he enjoyed an unfettered social intercourse such as he had never known before. He writes almost patronizingly of his teachers, and tells how he took the precaution to show his own paper on the mechanism of accommodation to the professor who was, on the following day, to lecture on the eye!

From Edinburgh to Göttingen. Here this amazing youth, though attending all the regular medical classes and perfecting his German, decides that his education has heretofore been too narrow, attends a lecture every morning at eight on European history, and takes regular lessons in riding, dancing, drawing and music. His flute and his dancing are regarded as seriously as his scalpel and his physiology. "I have not yet exhibited myself at a public dance, my master, who is a very sensible fellow, advising against it, but we have agreed that I may venture at the next pique nique."

Back to England. He goes to Emmanuel, and the Master says to his tutors, "I have brought you a pupil qualified to read lectures to his tutors." After such an introduction, what chance had Young of popularity at Cambridge? "He did not seem to know the names of most of our poets or literary characters in the last

century, took no delight in the pleasures of the table, and never could either make a joke or understand one." But another observer writes, "He never obtruded his various learning in conversation, but if appealed to on the most difficult subjects he answered in a quick, flippant, decisive way as if he were speaking of the most easy, and in this mode of talking he differed from all the clever men that I ever saw."

Experimental work done in Cambridge on sound and light was embodied in a memoir read to the Royal Society in January, 1800, and although only the first mutterings of his epoch-making work on the theory of light, was proclaimed by Sir John Herschel to " . . . alone have sufficed to place its author in the highest rank of scientific immortality, even were his other almost innumerable claims to such a distinction disregarded."

A legacy makes him financially peaceful, and the owner of a quite exceptionally choice collection of Reynolds pictures. He takes a house in Welbeck Street, from which he practises as a physician for twenty-five years.

His unique position as a scientist and a linguist are reflected in his appointment as Foreign Secretary to the Royal Society. In the years 1802–3, in three papers to the Royal Society, his undulatory theory of light was expounded—a theory which may be said to have held the undisputed field until our own day. At this time Young was Professor of Natural Philosophy at the Royal Institution. This office necessitated his lecturing continuously, and his subjects include mechanics, hydrostatics, acoustics, optics, theory of tides, astronomy heat, climatology. Young was not a popular lecturer, and this appointment must have kept a busy practitioner sadly distracted from professional work. Yet the necessity of preparing lectures drove Young still more thoroughly along avenues of pure science that he would otherwise but have glanced down, and it brought him into contact with two great scientific figures of the day, Davy and Faraday.

Young, though built for philosophical work, nevertheless most craved the laurels of the medical world, and after his lectures to the Royal Institution had been published, decided to write no more under his own name, except on medical subjects. His work published in 1815, *Practical and Historical Essay on Consumptive Diseases*, seems to have been an effort to show the public that he could write on things other than square roots and wave-lengths. Every year from July till October he moved his *ménage* to Worthing for reasons of professional expediency, for here, foreign travel being prevented by war, the better-class patients were to be found. He canvassed unsuccessfully for the position of Physician to the Middlesex Hospital, and in 1811 was elected Physician to St. George's. His duties at the hospital he discharged carefully and successfully, but he was never popular with staff or students. "Dr. Young is a great philosopher, but a bad physician," wrote a student. "He was gentle and gentlemanly, but never genial, and resorted to none of those many (and we may add perfectly justifiable) arts by which some physicians recommend themselves to their patients."

Try as he would, medicine never monopolized his powers. We find him working at Swedish in order to do a translation into English of the works of Berzelius, toying with Chinese, and getting enthusiastic about Egyptian. With Chinese he does not seem to have gone farther than noticing certain similarities between its characters and the hieroglyphics of Egypt, but the language of the Pharaohs is destined to call forth perhaps the greatest efforts of his genius. In a letter to a friend written in 1815 we find his state of mind reflected: "I have a long article on ancient languages already printed . . . I am also about another on yellow fever, which is woefully dull to write."

At the beginning of the nineteenth century the French had discovered at Rosetta a stone with three parallel inscriptions, one in the sacred hieroglyphics of the Egyptian temples, one in the common Enchorial characters, and one in Greek. When investigated it seemed probable that the stone held three translations of the same text, and it was realized that here was an opportunity to study the hitherto undecipherable Egyptian script. Three names stand out among those who strove with such success at this herculean philological task—a Swedish diplomat named Akerblad, a Frenchman named Champollion, and Dr. Thomas Young. It is difficult to apportion to each his fair share of commendation, but one is tempted to say of Young once again that "Had he accomplished nothing except his share in this piece of work he would have gained a well-merited place among the greatest thinkers of our race." His success in this realm was applauded far more in France than at home, and in 1828 he was elected one of the eight foreign associates of the Académie des Sciences. Over a period of fifteen years he was frequently at work on Egyptian hieroglyphics, and wrote the standard articles in the *Encyclopædia Britannica* on this subject.

There seem to have been few departments of life where a thorough scientific knowledge could be brought to bear on practical problems in which Young did not exercise his versatile genius. He is ordered to report to the Admiralty on a new principle in marine architecture, and we are reminded that the Modulus of

Elasticity, familiar to us in the physics laboratory, was propounded by him at this stage of his work. He is appointed secretary of a commission to investigate weights and measures; he is on a committee of the Royal Society to examine into the dangers of gas illumination; he is made Secretary of the Board of Longitude and Superintendent of the Nautical Almanack; he is inspector of calculations and medical referee to the Palladium Insurance Company, and works on a formula for expressing the value of life; he makes original and important contributions to the science of bridge building, under the stimulus of the failure of the Parliamentary Commission discussing the replacement of the old London Bridge; the hoops of a brewery vat fail, and he has produced new and practical ideas for the control of semi-fluid and cohesive substances under pressure; he struggles with the problem of dip and compass variations; he produces a theory of tides, which, in his own estimation, was the most successful of his physico-mathematical investigations; he examines Capt. Parry's Arctic expedition to ascertain whether they have reached sufficiently far north to claim a Parliamentary reward. He seems to have been on terms of intimacy with all the great figures of his day. Gay Lussac comes for the week-end; Lawrence paints his portrait; he spends much time with West, President of the Royal Academy. He loves London, and remarks, "No one who was able to live in London would be content to live elsewhere." As a letter-writer he had considerable charm. The real human Young is found here. One more short quotation from a letter written late in life is of great interest: "I have learned more or less perfectly a tolerable variety of things in this world, but there are two things that I have never yet learned and I suppose I never shall—to get up, and to go to bed. It is now past 12 o'clock, but I must write for an hour more."

Often Young's vigorous thought landed him in acrimonious controversies utterly foreign to his own quiet nature. The most bitter of these raged over his conduct of the Nautical Almanack, but the Egyptological and optical work often revealed the pettiness of the minds of his opponents, though always showing the greatness, balance and generosity of his own.

Young died on May 10th, 1829, at the age of 56. Asthmatic attacks had kept him confined to his room for three months previously, and his heart was known to be failing. His last anxiety was that nothing from his side should add heat to the controversy raging at that time over the arrangements of the Nautical Almanack.

Had Young worked merely in mechanics, only at the theory of light, exclusively at optics, or at philology and nothing else, he would have been famous. Yet he worked at all these in turn and at many another subject while carrying on a busy and successful medical practice.

Surely few mightier minds have been produced by our race.

[The biographical details for this note are largely taken from *The Life of Thomas Young*, by George Peacock, D.D., Dean of Ely, printed in 1855. The writer's thanks are also due to Mr. Charles Goulden for stimulus to investigate this extraordinary life, and for several anecdotes.] RALPH BOLTON.

## STUDENTS' UNION.

### ASSOCIATION FOOTBALL CLUB.

The following fixtures have been arranged for this season. They will be preceded by the usual trial games. The team showed considerable promise at the end of last season, and this year we are running three regular sides. It would be encouraging if we had a larger number of people to draw upon for the selection of the teams, and the Secretary will welcome all Freshmen who intend to play.

A. H. HUNT.

*Fixtures for* 1932–33.

| | | |
|---|---|---|
| Sat., | Oct. | 1.—St. Thomas's Hospital. Away. |
| ,, | ,, | 8.—Harrods. Away. |
| ,, | ,, | 15.—Old Brentwoods. Home. |
| ,, | ,, | 22.—Selfridge's. Away. |
| ,, | Nov. | 5.—Old Mercers. Home. |
| ,, | ,, | 12.—Downing College, Cambridge. Away. |
| ,, | ,, | 19.—Lancing Old Boys. Home. |
| ,, | ,, | 26.—Emmanuel College, Cambridge. Away. |
| ,, | Dec. | 3.—Guy's Hospital. Away. |
| ,, | ,, | 10.—Old Brentwoods. Away. |
| ,, | Jan. | 7.—Old Wykehamists. Home. |
| ,, | ,, | 14.—Old Westminsters. Home. |
| ,, | ,, | 21.—Old Bradfieldians. Home. |
| ,, | ,, | 28.—Keble College, Oxford. Home. |
| ,, | Feb. | 4.—Old Cholmelians. Home. |
| ,, | ,, | 11.—Old Aldenhamians. Home. |
| ,, | ,, | 18.—Downing College, Cambridge. Home. |
| ,, | ,, | 25.—St. Mary's Hospital. Away. |
| ,, | Mar. | 4.—Balliol College, Oxford. Away. |
| ,, | ,, | 11.—Old Foresters. Away. |
| ,, | ,, | 18.—Casuals. Home. |
| ,, | ,, | 25.—Brighton Old Grammarians. Home. |

### UNITED HOSPITALS HARE AND HOUNDS.

The opening run will take place on Wednesday, October 5th, at 3 p.m., from the Hospital's headquarters at the Dysart Arms, Petersham Road, Richmond. There will be a run every Wednesda y afterwards throughout the winter. Any freshmen or others wishing to run this winter should give their names to G. Dalley or A. I. Kinnear, or turn up at Richmond.

There is an attractive fixture-list, including matches against Oxford, Cambridge and Dublin Universities and the leading London clubs, concluding with the Inter-Hospitals' Championship in March. Unfortunately we shall not have the services of all the members of the team which won the Inter-Hospitals' championship last winter, so there will be several vacancies for newcomers in the team. The course is light and pleasant, the standard of running is not too high and no special equipment is necessary. G. D.

### UNITED HOSPITALS SAILING CLUB.

The season has ended satisfactorily. Bart.'s have won both the Harvey Challenge Cup and the Bourne Trophy, which are awarded on the season's racing.

In the United Hospitals Regatta on September 18th we gained a first and a third place in the races for the Sherren Cup, which is awarded for a team race, each hospital being represented by four helmsmen.

In the first race we did rather badly to get placed third, but G. C. Brentnall and D. R. Crabb sailed extremely well to win the second race by about two feet from St. Mary's Hospital, the team consisting of R. G. MacFarlane, G. C. Brentnall, D. R. Crabb and W. H. Cartwright.

The final result depends on the method of scoring adopted, and we either win the Cup or share it with St. Mary's, who scored two second places.

The Club thanks are due to the Commodore, Dr. Dudley Stone, who presented us with a new racing mainsail towards the end of the season, which gave us a much better chance of putting up a good performance.

The latest trophy for competition is the "Doubleday Cruising Cup," which has just been presented by Mr. Doubleday of Guy's for the best log of a cruise by U.H.S.C. members during this season. Details of the conditions may be obtained from the Secretary.

The United Hospitals Sailing Club provides the cheapest sailing and racing of any club in the country, and anyone who has sailed or is interested would find it well worth their while to join while they are at the Hospital; not only for their immediate gain, but for the opening it provides to racing and cruising in bigger boats.

W. H. CARTWRIGHT.

## CORRESPONDENCE.

### THE EARLY DIAGNOSIS OF CANCER.

*To the Editor, 'St. Bartholomew's Hospital Journal.'*

DEAR SIR,—The early diagnosis of cancer, and desirability for periodic examinations as suggested by Dr. Malcolm Donaldson in recent issues of the Hospital JOURNAL, is of special interest if these problems are studied from the actual history of cases coming under a general practitioner's care, which are viewed in the light of these ideas to see how such a scheme works out in actual practice. I quote here from four of the more recent cases of cancer that have come under my observation and the type of history usually obtained.

(1) *A case of cancer of breast.*—Consulted me for first time early July of this year. I have elicited that she had noticed a little sore place on the breast as far back as Sept. 1931. (This, I think, was definitely a case of "fear" before revealing the condition, as I had attended her sister for long periods during that time, and had seen this particular woman several times on my visits to the house; but never a word about herself.)

Let us ask ourselves these three questions:

(*a*) Was this delay the doctor's fault?—No.
(*b*) Was this delay the patient's fault?—Yes.
(*c*) Would periodic examination have helped?—Yes.

(2) *A case of cancer of rectum.*—It was owing to hæmorrhage that she sought advice, although she had been troubled for some few months past with constipation, pain, etc., but did not think it worth while consulting a doctor about it until the hæmorrhage started to frighten her.

Again you will observe a history of months. Applying our questions to this case we obtain exactly the same answers.

(3) *Another case of cancer of breast.*—Said she only knew of trouble for last few weeks, but obviously was of months' standing, probably a year or even a little longer.

Here again we answer our questions as in the first two cases quoted.

(4) *A case of cancer of stomach.*—A case giving a very short history of "definite" symptoms, a case in which the man was able to say that a year ago he was a big man capable of a hard day's work, and now all in three months gone to a shadow and no life left in him.

(*a*) Was this the doctor's fault?—No.
(*b*) Was this the patient's fault?—No.
(*c*) Would periodic examination have helped?—No (I suggest).

It is in such cases and their like—the silent or hidden cancers—that such a scheme suggested would be of, I venture to suggest, little or no value. In what might be termed the external cancers, such as on the breast, tongue, and so on, such a scheme has its uses; for the silent or hidden variety its value is an extremely doubtful quantity. I don't think, until the ætiology of the disease is discovered and its subsequent cure in consequence greatly helped by that knowledge, until, in fact, we as a profession can offer to the public a reasonable chance of permanent cure—as surgery of to-day can do in a large percentage of cases other than cancer—that money spent on propaganda and working of such schemes would be of any real practical value. Spend whatever money is to be spent in discovering its cause and the rest will follow automatically.

I believe, as the problem stands to-day, that there is also another fear, besides that of the disease itself, that prevents the victims (*those that could come early*) from seeking advice, and that is the fear that if it is cancer, what can be done for it? How often do we hear of one treatment having to be followed at a later date by some other! They have heard it too; they leave it to the last moment, as it were, and in consequence we so often hear ourselves repeating, "If only you had come earlier."

Yours, etc.,

62, Forest Road,
Dalston, E. 8.

DUDLEY H. COCKELL.

### THE POTMAN'S SUICIDE.

(*To answer "C"—though not "theology."*)

*To the Editor, 'St. Bartholomew's Hospital Journal.'*

There lived a man, outcast and hopeless, who,
Deep in Life's miry clay, clutched at a hand
That raised and cleansed, created him anew.
Delivered from the Past, his Future planned,
He met fresh foes, laughed in the face of pain,
Helped other failures to be men again.

He had no right to heaven, when he went
(For, whether good or bad, we all come short).
But one, "The Friend of Publicans," had spent
His life to buy him back from Death; and nought
Had he save this, to ease Man's heavy yoke,
"There's only Him, and Love, and helping folk."

Poor Potman, had he never called to Him?
Or did he scorn such "old, religious stuff"?
He staked his life on Death, for some slight whim
Of that girl's will. Had he not strength enough
To live? Christless, alone, he faces grim
Eternity. How many follow him!

EUTYCHUS.

## REVIEW.

HYPNOTISM, SUGGESTION AND FAITH-HEALING. By ALEXANDER CANNON, M.D. (London: Wm. Heineman, Ltd., 1932.) Price 2*s.* 6*d.*

It is astonishing what a lot of information is crowded into these 37 pages of Dr. Cannon's book and yet the whole is exceedingly readable. After a short introduction, he describes the methods of hypnotism and then gives a brief account of the theories of its mechanism and its possibilities in therapeutics. It is a sanely written book and should be of great value to those of the medical profession who wish to know something of treatment by suggestion.

## ACKNOWLEDGMENTS.

*L'Echo Médical du Nord—Revue Belge des Sciences Médicales—Acta Scholæ Medicinalis (Kioto)—Giornale della Reale Società Italiana d'Igiene—Bulletins et Mémoires de la Société de Médecine de Paris—Extrait des Annales de L'Institut Pasteur—East African Medical Journal—Quarterly Journal of the Research Defence Society—The Clinical Journal—The Nursing Times—Sydney University Medical Journal—The General Practitioner of Australasia—Guy's Hospital Gazette—St. Thomas's Hospital Gazette—The London Hospital Gazette—King's College Hospital Gazette—University College Hospital Magazine—Magazine of the London Royal Free Hospital—The Medical Times and Long Island Medical Journal—St. Mary's Hospital Magazine.*

## EXAMINATIONS, ETC.

### University of London.

#### First Examination for Medical Degrees, July, 1932.

Bateman, A. D., Baum, I. H., Blakelock, L. H., Braines, F. M., Brockbank, C. A., Brooker, A. E. W., Carpenter, M. A., Cunningham, A. G., Darke, G. H., Ennis, J. E., Hambly, E. H., Herbert, G., Hoadley, J., Jackson, H., McKane, T. O., Mountjoy, E. R., Pearce, H. A., Ramsay, F., Rendall, C. D. S., Roy, A. N., Rutherford, S. T., Simmons, G. H. A., Stevenson, R. Y., Sugden, W. G., Thomson, R. W., Tongbai, B., Welply, R., White, R. A.

### Royal Colleges of Physicians and Surgeons.

The following Diploma has been conferred:

**D.O.M.S.**—Adams, W. F. T., Bolton, R., Sal, R., Tait, C. B. V.

### Conjoint Examination Board.

#### Pre-Medical Examination, July, 1932.

**Chemistry.**—Benson, T. L., Brockbank, C. A., Nixon, J. C., Williams, W. R.

**Physics.**—Baum, I. H., Brockbank, C. A., Hambly, E. H., Knowles, H.

**Biology.**—Berman, B., Brockbank, C. A., Clunies Ross, W. G. F., Halford, R. B., Kershaw, R., Knowles, H., MacKelvie, K. C., Perrott, J. W., Storey, T. P.

#### First Professional Examination, July, 1932.

**Anatomy.**—Bird, G. E. N., Dolly, R. C., Force-Jones, R. J., Sugden, K. H., Young, W. J.

**Physiology.**—Bensley, W. E. C., Dolly, R. C., Force-Jones, R. J., Shemilt, W. P., Sugden, K. H., De Vine, J. G. B.

**Pharmacology.**—Appelman, M., Davies, H. H., Phipps, G. G., De Vine, J. G. B.

#### Final Examination, July, 1932.

The following students have completed the examinations for the Diplomas of **M.R.C.S., L.R.C.P.**

Bateman, C. H., Bhatia, R. N., Birdsall, S. E., Blackburne, J. R., Cates, B., Davies, D. T., Davies, W. H. D., Gawne, D. W. C., Halperin, J., Hunt, W., Iliff, A. D., Katz, M., Magnus, H. A. Mercer, R. V. F., Ryan, T. J.

### L.M.S.S.A.

The Diploma of the Society has been conferred on:

Grace, A. A.

## CHANGES OF ADDRESS.

BRANSON, W. P. S., Wharfenden, Frimley Green, Surrey.

BURGESS, W. J., The Old House, Chipping Ongar. (Tel. Ongar 102.)

BURROWS, H. J., 40, Harley Street, W. 1. (Tel. Langham 1011.)

HALL, P., 31, Cumberland Mansions, Upper George Street, W. 1. (Tel. Paddington 5207.)

HARTLEY, K. W. D., Orchard Cottage, Old Road East, Gravesend, Kent.

JENKINSON, Surg.-Lt. S., R.N., H.M.S. "Alecto," 5th Submarine Flotilla, Portland, Dorset.

LANDOR, J. V., General Hospital, Johore Bahen, India.

LEONARD, Col. W. H., I.M.S., c/o Messrs. T. Cook & Son, Hornby Road, Bombay, India.

OAKLEY, D., 1, Lindfield Gardens, Arkwright Road, Hampstead, N.W. 3. (Tel. Hampstead 3053.)

RAVEN, R. W., 115, Hendon Way, N.W. 2. (Tel. Speedwell 4818.)

SCOTT, Group-Captain H. W., R.A.F.M.S., Kiln Cottage, Holmwood, Surrey.

WILLOUGHBY, H., Hillview, Parrock Avenue, Gravesend. (Tel. Gravesend 626.)

## APPOINTMENT.

NOON, C., F.R.C.S., appointed Honorary Surgeon, Norfolk and Norwich Hospital.

## BIRTHS.

EDWARDS.—On July 13th, 1932, to Fifi, wife of Dr. F. A. Edwards, 91, Bromley Road, Catford—a daughter.

HOBBS.—On September 16th, 1932, at Old Court, Ealing, to Agnes, wife of Dr. A. N. Hobbs, 30, Woodville Road, Ealing—a daughter.

LLOYD.—On September 4th, 1932, at 20, Clifton Road, Rugby, to Hazel, wife of W. Jeaffreson Lloyd, M.B., B.Chir.—a son.

ROBB.—On September 17th, 1932, at Quarrylands, Exeter, to Anna (*née* Austen), wife of W. Austin Robb—a daughter.

## MARRIAGES.

HARTLEY—MILLAR.—On August 27th, 1932, at the Church of St. Bartholomew-the-Great, West Smithfield, Kenneth William Dawson, elder son of J. D. Hartley, F.R.C.S., and Mrs. Hartley, of Bedford, Darnley Road, Gravesend, to Elizabeth (Betty) Gibson, only daughter of Mr. and Mrs. A. Millar, of Hillside, Bishops Stortford.

TAYLOR—PEARSON.—On September 17th, 1932, at the Church of St. Bartholomew-the-Great, Hermon Taylor, M.Ch., F.R.C.S., son of Mr. and Mrs. E. O. Taylor, of Edmonton, N., to Méarie Amélie, second daughter of Mr. and Mrs. A. M. Pearson, of Stamford Hill, N.

## DEATHS.

DINGLE.—On September 7th, 1932, at "Strathmore," Ilfracombe, William Alfred Dingle, M.D., T.D., formerly of Finsbury Square, E.C. 2, aged 82.

KERR.—On June 21st, 1932, Charles Douglas Kerr, M.B., B.S. (Lond.), of Fremantle, Western Australia.

ROSS.—On September 16th, 1932, at the Ross Institute, Putney Heath, S.W. 15, Col. Sir Ronald Ross, K.C.B., K.C.M.G., F.R.S., N.L., I.M.S.(ret.), aged 75.

## NOTICE.

*All Communications, Articles, Letters, Notices, or Books for review should be forwarded, accompanied by the name of the sender, to the Editor,* ST. BARTHOLOMEW'S HOSPITAL JOURNAL, *St. Bartholomew's Hospital, E.C. 1.*

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